Clean Air Facts

Secondary Aluminum MACT and Area Source Requirements

SBCA-ALM7-0509

The following checklist will help you follow the requirements in the Secondary Aluminum MACT.

General Requirements Affecting All Sources

Each of the affected units will need to follow these requirements as well as those identified in the unit specific sections below.

Equation for Determining Compliance

_____ use equation 7 when determining compliance with the emissions limit from the performance test results for any of the feed/charge rate based limits

$$E = \frac{C \times Q \times K_1}{P} \qquad \text{(equation 7)}$$

E = emission rate of D/F in (lb/ton)
C = concentration of D/F in (gr/dscf)
Q = volumetric flow rate of exhaust gas in (dscf/hr)
K_1 = conversion factor (1 lb/7000gr)
P = production rate (ton/hr)

Capture/Collection System

_____ have a capture and collection system designed and installed to meet engineering standards of minimum exhaust rates {per American Conference Governmental Industrial Hygienists' *Industrial Ventilation* Manual, chapters 3 and 5}

_____ vent the captured emissions through a closed system, except where dilution air is added to control temperature at the inlet of a fabric filter

_____ inspect at least once each calendar year

Measurement Devices

_____ device for weighing each batch fed/charged to units has met specifications for installation, calibration, operation and maintenance, and accuracy

_____ device to monitor and record control device operating temperature has met specifications for installation, calibration, operation and maintenance, and accuracy

Operation, Maintenance and Monitoring

_____ have OM&M Plan for each affected emissions unit that shows how you are meeting their respective emissions limits

The OM&M plan includes the following:

_____ process and control device parameters and operating ranges or levels to be monitored

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_____ a monitoring schedule for each affected unit
_____ procedures for proper operation and maintenance of each emissions unit and control device (calibration, certification of accuracy, CEM or COM quality control/quality assurance procedures)
_____ procedures to monitor emission unit and control device parameters (inspections, weight measurements, etc.)
_____ corrective actions for control device operation maintenance schedule for each emission unit and control device
_____ documentation of work practice and pollution prevention measures for Group 1 furnaces without an add-on control device (including the scrap inspection plan)

Start-up, Shut-down and Malfunction Plan

_____ Prepare a plan to address maintaining compliance with the emissions limits during startup, shut-down and malfunction (SSM) situations.

The SSM plan should describe the procedures for:
_____ operating emissions units during start-up, shut-down, and malfunction, and
_____ a program of corrective action for malfunctions of either the emissions unit or control device equipment used to comply with the standard

Testing and Inspections

For each performance test:
_____ each test must be performed at the outlet of the emissions unit or control device
_____ each test must be performed at the highest capacity of the process with charge materials representative of the range of materials processed
_____ for a continuous process the test must consist of 3 runs, each of the length specified in the test method or, if not specified, a minimum of three hours
_____ for a batch process the test must consist of 3 runs, each conducted over the entire process operating cycle
_____ for multiple units exhausted through a common stack, each run must be conducted over a period of time during which each of the units complete at least one entire operating cycle or for 24 hours, whichever is shorter

Afterburner temperature:
_____ for Thermal Chip Dryers and Sweat Furnaces, continuously monitor the exit of the combustion chamber and record the temperature every 15 minutes during the test
_____ for SDDKs and Group 1 Furnace/SAPUs:
    _____ continuously monitor the exit of the combustion chamber and record the temperature every 5 minutes during the test, and
    _____ maintain the temperature at or above 1400°F in each 3-hour block testing period
_____ for each fabric filter, continuously monitor the temperature at the inlet to the device and record every 15 minutes
_____ for each lime-injected filter, record the feeder setting for each silo during each test run

For group 1 furnaces/SAPUs:
_____ record weight of reactive flux injected for each 15 minute period during the test
_____ record total weight of reactive flux injected for all three test runs
_____ record type and composition of flux added for each run
_____ establish minimum/maximum operating parameter values during the test

Conducting annual afterburner inspections:
_____ inspect all burners, pilot assemblies, and pilot sensing devcies and clean pilot senser
_____ ensure proper adjustment of combustion air
_____ inspect internal structures (e.g., baffles) to ensure structural integrity
_____ inspect dampers, fans, and blowers for proper operation
_____ check for proper sealing
_____ check motors for proper operation
_____ inspect combustion chamber refractory lining and clean and replace lining as needed
_____ check afterburner shell for corrosion and/or hot spots
_____ documentation during the burn cycle that follows the inspection to show the afterburner is operating properly and all necessary adjustments were made
_____ verify that the equipment is maintained in good operating condition

Excess Emissions/Summary Report

_____ Within 60 days of the end of each 6 month reporting period, the owner/operator submitted a report summarizing events of excess emissions.
_____ If no deviations of the applicable requirements occur, the owner/operator must submit a report that no excess emissions occurred.

The excess emissions report included:
_____ if any corrective action specified in OM&M for a control device or monitoring system was not initiated within 1-hour of an alarm;
_____ if there was an excursion of a compliant process or operating parameter value or range (e.g., total flux injection rate, afterburner operating specifications, etc.);
_____ any action taken during start-up, shut-down or malfunction was not consistent with the SSM plan;
_____ an affected source was not operated according to the requirements of the rule;
_____ a deviation from 3-day, 24-hour average emission limit for a SAPU;
_____ certification on thermal chip dryer, such as: “thermal chip dryer used only unpainted aluminum chips as feedstock during this reporting period”;
_____ certification for sidewell Group 1 furnace with add-on control that “was operated such that metal remained above top of passage to hearth during fluxing or reactive flux added only to sidewell or to hearth also directed to control device”;
_____ certification for Group 1 furnace without add-on control device and using pollution prevention measures that processes only clean charge that “each furnace without add-on control device and subject to work practice or pollution prevention, processed only clean charge”; AND
_____ results of any performance test conducted during the reporting period, including the approved test plan.

Certification

_____ every 6 months, certify charged materials all met allowed content during the time period
_____ annually certify that during the year any excess emissions were properly reported and that all monitoring, recordkeeping and reporting requirements were met

Records

_____ maintain ALL records at least 5 years from the date of record, and at least the first two years are available on site
_____ records maintained for any approved alternative monitoring or test procedure

_____ maintain records for each startup, shut down, and malfuntion event:
- _____ actions taken during start-up, shut-down or malfunction were consistent with the written plan for such events
- _____ the cause of a malfunction, and when it began and ended
- _____ what actions were taken to correct a malfunction and minimize emissions

Unit specific, for all types:
_____ records to document the monthly inspections for the unit labeling requirements
_____ record date and findings of annual inspections for each capture/collection system and control device

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Requirements Specific to Affected Units

Thermal Chip Dryers

A thermal chip dryer is a device that uses heat to evaporate water, oil or oil/water mixtures from unpainted/uncoated aluminum chips. Preheating units used solely to drive off water are not considered thermal dryers for this rule.

Emission Limits

_____ meet emissions limit = no more than 3.5 x 10^{-5} grains (gr) dioxin/furan toxic equivalents (D/F TEQ) per ton of feed/charge [or 2.50 micrograms (μg) D/F TEQ per megagram (Mg) feed/charge]

Compliance Demonstration

_____ initial performance test conducted __/__/__

_____ °F = average operating temperature of the afterburner measured during the performance test

_____ conduct annual inspection of each control device

If using afterburner:
_____ maintain operating temperature at or above that established in the test

Records

_____ record that unit is **not** operated with anything but unpainted/uncoated aluminum
_____ record amount of feed/charge (tons) for each batch

Records - If Controlled by Afterburner

_____ record each 15-minute average of operating temperature
_____ calculate and record each 3-hour block average of operating temperature

_____ where the average temperature falls below the compliant operating parameter value, record an explanation of the excursion and related corrective actions; for example:

Excursion Date	Explanation/Corrective Actions
__/__/__	_____
__/__/__	_____

Scrap Dryer/Delacquering Kiln/Decoating Kiln

A scrap dryer/delacquering kiln/decoating kiln refers to a unit that is primarily used to remove various organic contaminants such as oil, paint, lacquer, ink, plastic, and/or rubber from aluminum scrap - including used beverage containers - prior to melting.

Emission Limits

_____ meet emissions limit = no more than 3.5 x 10^{-6} grains (gr) dioxin/furan toxic equivalents (D/F TEQ) per ton of feed/charge [or 0.250 micrograms (μg) D/F TEQ per megagram (Mg) feed/charge]

Alternate, if using afterburner:

_____ meet alternate emissions limit = no more than 7.0 x 10^{-5} gr D/F TEQ per ton of feed/charge [or 5.0 μg D/F TEQ per Mg feed/charge]

Compliance Demonstration

_____ initial performance test conducted __/__/__

_____ °F = average operating temperature of the afterburner **OR** average inlet temperature to the fabric filter control device measured during the performance test

_____ conduct annual inspection of each control device

If using afterburner:

_____ maintain operating temperature at or above that established in the test

If using fabric filter or lime-injected fabric filter:

_____ use a bag leak detection system OR continuous opacity monitor system (COMS)
_____ continuously measure inlet temperature to filter device
_____ maintain inlet temperature **at or below** that established during test, **+25°F**

Lime-injected filters only:

_____ maintain free flowing lime in hopper at all times
_____ operate feeder setting/injection rate within range established during performance test

If NOT using COMS:

_____ equipment should alarm on leak detection
_____ operate filters such that alarm time is less than 5% of total operating time

For each unit:

_____ visible labels present on each unit that identifies:
- _____ type of unit
- _____ emission limit and operational standard that applies
- _____ control method used
- _____ operating parameters (such as charge used, afterburner temperature, residence time)

_____ inspect labels once per month

RECORDS - AFTERBURNERS

_____ record each 15-minute average of operating temperature
_____ calculate and record each 3-hour block average of operating temperature

_____ where the average temperature falls below the compliant operating parameter value, record an explanation of the excursion and related corrective actions; for example:

Excursion Date	Explanation/Corrective Actions
__/__/__	_____
__/__/__	_____

RECORDS - FABRIC FILTERS

_____ total operating time
_____ time for each alarm (date and time of alarm start, time leak corrected, action taken)

Alarm Date & Time	Explanation/Corrective Actions
__/__/__; _____	_____
__/__/__; _____	_____

_____ record each 15-minute average of operating temperature
_____ calculate and record each 3-hour block average of operating temperature

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Group 1 Furnaces/Secondary Aluminum Production Units (SAPU)

These are furnaces of any design that melt, hold or process aluminum that contains paint, lubricants, coatings, or other foreign materials with or without reactive fluxing, or process clean charge *with* reactive fluxing.

EMISSION LIMITS

_____ emissions of D/F TEQ no more than 2.1×10^{-4} gr per ton [15 μg per Mg] of feed/charge, including when furnace is part of SAPU - for each 3-day, 24-hour rolling average of D/F emissions

Alternate limit, when Group 1 furnace part of SAPU:

_____ use the following equation (except for clean-charge-only units since they are not subject to a D/F limit)

$$Lt_{D/F} = \frac{\Sigma\ (Li_{D/F} \times Ti)}{\Sigma\ (Ti)}$$

$Lt_{D/F}$ = the overall D/F **limit** for the SAPU (gr TEQ/ton of feed);
$Li_{D/F}$ = the D/F emission limit for individual emission unit i (gr TEQ/ton of feed) in the SAPU;
T_i = the feed rate for individual emission unit i in the SAPU

For aluminum-weighted emissions, calculate using the following equation:

$$Ec_{D/F} = \frac{\Sigma\ (Eti_{D/F} \times Tti)}{\Sigma\ (Tti)}$$

$Ec_{D/F}$ = the mass-weighted D/F emissions for the SAPU;
$Eti_{D/F}$ = measured D/F emissions for individual emission unit i in the SAPU;
Tti = the feed rate for individual emission unit i in the SAPU

Compliance Demonstration

_____ area source may also demonstrate compliance for a SAPU without performing the above calculation by showing that each unit within the SAPU can meet the limit for a group 1 furnace

For each unit:

_____ visible labels present on each unit that identifies:
- _____ type of unit
- _____ emission limit and operational standard that applies
- _____ control method used
- _____ operating parameters (such as charge used, afterburner temperature, residence time)

_____ inspect labels once per month

With Add-on Control Device

_____ initial performance test conducted __/__/__

_____ °F = average operating temperature of the afterburner **OR** average inlet temperature to the fabric filter control device measured during the performance test

If using afterburner:

_____ maintain operating temperature at or above that established in the test

If using fabric filter or lime-injected fabric filter:

_____ use a leak detection system OR continuous opacity monitor system (COMS)
_____ continuously monitor inlet temperature to the device
_____ maintain inlet temperature **at or below** that established in performance test, **+25°F**

Lime-injected filters only:

_____ maintain free flowing lime in hopper at all times
_____ operate feeder setting/injection rate within range established during performance test

If NOT using COMS:

_____ equipment should alarm on leak detection
_____ operate filters such that alarm time is less than 5% of total operating time

Additional requirements:

_____ maintain the total reactive flux injection rate at or below the average rate established during the performance test
_____ each sidewell furnace is operated so that the molten metal remains above the passage between the sidewell and the hearth
_____ if metal falls below passage, do one of following:
- _____ add reactive flux only to the sidewell
- _____ have the hearth exhausted to the control device

Without Add-on Control Device

_____ maintain the total reactive flux injection rate at or below the average rate established during the performance test

_____ operate the furnace in accordance with work practice standards or pollution prevention measures documented in the OM&M plan
_____ operate the furnace within any parameters values or ranges established in the OM&M plan
_____ develop a scrap inspection program **or** scrap contamination monitoring plan to monitor the level of contamination in the scrap

SCRAP INSPECTION PROGRAM
_____ Proven method to collect representative samples.
_____ Method to measure oil and coatings content.
_____ Scrap inspector training program.
_____ Correlation between visual inspection and physical measure of oil and coatings content.
_____ Comparison of randomly selected scrap with visual inspection results for oil and coatings.
_____ System to assure only acceptable scrap is charged to furnace.
_____ Record keeping requirements to document conformance with plan.

SCARP CONTAMINATION MONITORING PROGRAM
_____ Calculation method.
_____ Procedures for characterization of distinct scrap types.
_____ Documentation of contaminant level of scrap prior to performance test.
_____ Limitations on the furnace feed/charge including the proportion of scrap of each distinct type used during the performance test.
_____ Method to ensure that no scrap with a contaminant level higher than that used in performance test is charged to the furnace.
_____ Certification of scrap contaminant level.

RECORD KEEPING - GROUP 1 FURNACE
For each 15-minute average:
_____ weight of gaseous or liquid reactive flux injection
_____ calculations for each addition of flux

_____ document any period where the injection rate exceeds the compliant operating parameter value - record an explanation of the excursion and related corrective actions; for example:

Excursion Date	Explanation/Corrective Actions
__/__/__	_____
__/__/__	_____

RECORD KEEPING - SAPU
_____ total charge weight or the total production for each 24-hour period
_____ calculations for each 3-day, 24-hour average emissions

RECORDS - AFTERBURNERS
_____ record each 15-minute average of operating temperature
_____ calculate and record each 3-hour block average of operating temperature

_____ where the average temperature falls below the compliant operating parameter value, record an explanation of the excursion and related corrective actions; for example:

Excursion Date	Explanation/Corrective Actions
__/__/__	_____
__/__/__	_____

Records - Fabric Filters

_____ total operating time
_____ time for each alarm (date and time of alarm start, time leak corrected, action taken)

Alarm Date & Time	Explanation/Corrective Actions
__/__/__; _____	_____
__/__/__; _____	_____

_____ record each 15-minute average of operating temperature
_____ calculate and record each 3-hour block average of operating temperature

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Sweat Furnaces

A sweat furnace is a unit that is specifically designed to reclaim aluminum from scrap that also contains large quantities of iron. The aluminum has a lower boiling point than iron and will melt off in the furnace at the right temperature while the iron remains solid. Scrap yards might use a sweat furnace to reclaim aluminum from items like sheet and cast aluminum, while automotive salvage operations can reclaim aluminum from unusable auto parts like transmissions.

Emissions Limit

_____ emissions of D/F TEQ no more than 3.5 x 10^{-10} gr per dry standard cubic foot (dscf) [0.80 nanogram (ng) per dry standard cubic meter (dscm)] at 11% oxygen

Alternate limit

Operate an afterburner with following parameters (no performance test required):
_____ residence time of 0.8 seconds or greater
_____ operating temperature of 1600°F or greater

Compliance Demonstration

To meet the emissions limit (not alternate limit):
_____ initial performance test conducted __/__/__

_____ °F = average operating temperature of the afterburner measured during the performance test

Afterburners

_____ record each 15-minute average of operating temperature
_____ calculate and record each 3-hour block average of operating temperature

_____ where the average temperature falls below the compliant operating parameter value, record an explanation of the excursion and related corrective actions, for example:

Excursion Date	Explanation/Corrective Actions
__/__/__	_____
__/__/__	_____